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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/650,103	08/29/2000	FRANCIS A. ABRAMOVICH	BUR9-1999-0267-US1	9020
29505	7590	03/30/2004	EXAMINER	
DELIO & PETERSON, LLC 121 WHITNEY AVENUE NEW HAVEN, CT 06510			EL ARINI, ZEINAB	
			ART UNIT	PAPER NUMBER
			1746	

DATE MAILED: 03/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/650,103	Applicant(s) ABRAMOVICH ET AL.	
	Examiner Zeinab E. EL-Arini	Art Unit 1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2004 and 24 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 20-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 20-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/03/04 has been entered.
2. Claims 19, and 29-30 have been cancelled.
3. Claims 1-18, and 20-28 are pending.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 28 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way

as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification, as originally filed does not provide support for "the step of passing the wafer through the second fluid interface such that a protective coating is formed on a surface of the wafer" as claimed in claim 28.

5. Claim 28 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the workpiece can be cleaned in water and coated with the oil for corrosion protection (page 10, lines 11-12), does not reasonably provide enablement for the step of passing the wafer through the second fluid interface such that a protective coating is formed on a surface of the wafer. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/ or use the invention commensurate in scope with these claims. The specification as originally filed is not enabling for "the step of passing the wafer through the second fluid interface such that a protective coating is formed on a surface of the wafer" .

The following is a quotation of the second paragraph of 35 U.S.C.

112:

6. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 25-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 25, line 2, "layer form a surface" is indefinite and confusing term.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-6, 8-9, 11-18, and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berbel or Matthews.

With respect to claims 1-6, 8-9, 11-18, and 21-24, Berbel as discussed supra in paper No. 6 teaches a method for drying objects. The method comprising providing at least two fluids of different densities such that a fluid interface exist between each fluid, providing the article, positioning the article into one of the at least two fluids, and passing the article through at least one fluid interface vertically. See the abstract, col. 2, line 58- col. 3, line 48, col. 4, lines 21-60, col. 6, lines 14-56, and the claims. Berbel teaches that the volatile second fluid is pumped into the container from beneath the first fluid, thereby scrubbing the object with the first and second fluids as the second fluid pushes the first fluid to the exit. See col. 3, lines 17-21. The reference also teaches that the object 46, when introduced along path 60, first is washed by first fluid 48, then by volatile second fluid 50 until it is removed from container 12. See col. 4, lines 52-60. The reference also teaches removing the particles that adhere to the surfaces. See col. 6, lines 48-56.

Matthews as discussed supra in paper No. 6 teaches a process for removing organic materials from semiconductor wafers, and a process for drying the wafers. The reference teaches providing two fluids of different densities, the interface, passing the article through the at least one fluid interface vertically, and drying the wafers. The reference teaches using the organic solvent such as ether, ketones. See col. 15, line 7- col. 16, line 48, and the claims. The reference also teaches that his invention relates to semiconductor manufacturing, and more specifically, the invention involves an improved process for removing organic material from wafers during the wet etch/ clean steps of wafer fabrication. See col. 1, lines 12-15.

However Berbel and Matthews do not disclose removing contaminants from the surface of an article as claimed.

It would have been obvious for one skilled in the art to use the process taught by Berbel or Matthews to remove the contaminants from an article surface, because the process as taught by Berbel and Matthews is functionally equivalent to the process as claimed.

This is because scrubbing the article as taught by Berbel and removing the water including the residues taught by Matthews are functionally equivalent to removing the contaminants from an article surface as claimed.

10. Claims 7, 10, 20, and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berbel or Matthews as applied to claims 1-6, 8-9, 11-18, and 21-24 above, and further in view of Li and Squires et al.

With respect to claims 7, 10, 20, and 25-28, Berbel as discussed supra does not teach the etching, the etchant fluid, and the agitation as claimed. Matthews as discussed supra does not teach the agitating as claimed.

Li as discussed supra in paper No. 6 teaches a method and compositions for cleaning silicon wafers in a two- phase liquid system. See the abstract. Li teaches the etchant, the at least two fluids of different densities, using the nonpolar organic liquids, which include ethers, ketones, and alkenes. See col. 3, lines 10-67, and cols. 4-6, and the claims.

It would have been obvious for one skilled in the art to use the etchants and the etching step taught by Li in the process taught by Berbel or Matthews to obtain the claimed process. This is because it is well known in the art to use etchant to remove the contaminants from a surface of an article. Since Matthews as discussed supra teaches that his invention can be used in the wet etch/ clean steps of the wafer fabrication. One skill in the art would use the etchant taught by Li in the Matthews process to obtain the claimed process. For the step of terminating etching of the wafer when the wafer is passed through the fluid interface into at least one fluid immiscible with the etchant fluid, it is expected for one skill in the art to obtain this result, by lifting the wafer from the etchant fluid. The etchant fluid as claimed in claims 25-28 can be considered as a water, or any fluid used in etching a substrate, it is well known in the art that water can be used for etching the wafer.

Squires et al. as discussed supra in paper No. 6 teach a method for stripping organic coating from substrates. The reference teaches the two- phase fluids, and the agitation as claimed.

It would have been obvious for one skilled in the art to use the agitation taught by Squires et al. in the process taught by Berbel or Matthews to improve the removing process. This is because using the agitation will enhance the cleaning or the removing process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeinab E. EL-Arini whose telephone number is (571)272-1301. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571)272-1302. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9310 for regular communications and (703)872-9311 for After Final communications.

Zeinab Elarini
Zeinab E. EL-Arini
Primary Examiner
Art Unit 1746

ZEE
March 25, 2004